Milwaukee Street Bridge
Spanning Rock River, on Milwaukee Street
Watertown
Jefferson County
Wisconsin

HAER NO. WI-33

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
U. S. Department of the Interior
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HISTORIC AMERICAN ENGINEERING RECORD

Milwaukee Street Bridge

HAER No. WI-33

Location:	Spanning Rock River, on Milwaukee Street Watertown, Jefferson County, Wisconsin UTM: 16.359720.4783130 Quad: Watertown
Date of Construction:	1930
Builder/Designer:	Contractor: Eau Claire Engineering Company Designer: Luten Engineering Company
Present Owner:	City of Watertown
Present Use:	Vehicular and Pedestrian Traffic
Significance:	Watertown city officials declared the existing Milwaukee Street Bridge unsafe in 1929 and began considering plans for erecting a steel girder or concrete bridge. Daniel B. Luten, a prominent bridge designer in Indianapolis, submitted a plan for an open arch concrete span. The Common Council accepted Luten's design and let the construction contract to the Eau Claire Engineering Company. The firm completed the three-span bridge in November 1930. The bridge is significant for its aesthetic lines and for its affiliation with the Indianapolis designer.
Historian:	Diane Kromm Wisconsin Historic Bridge Recording Project Summer 1987

On February 4, 1929, a section of the Milwaukee Street Bridge in Watertown collapsed. A large rusted cross beam supporting the strings gave way, causing the bridge to drop at least one foot. A passing truck drive alerted city officials who immediately closed the bridge to all traffic. When closer inspection revealed more deterioration from rust, they sent for bridge engineering M. W. Torkelson to make plans for repairs. Torkelson, the Wisconsin representative of Consoer, Oldsr & Quinlan, consulting engineers in Chicago, and former bridge enginser with the Wisconsin Highway Commission, recently had conducted a condition survey of Watertown bridges. Officials considered it necessary to repair the bridge as soon as possible because the structure carried a heavy volume of traffic, including area milk trucks. The following evening, the Watertown city council authorized repairs to begin at once. The Otto Biefeld Company complsted the job within four days, and city officials reopened the bridge to traffic.[1]

The Milwaukee Street Bridge continued to serve the community through the following year. By the summer of 1930, however, discussions resumed on repairing the bridge. The Watertown Board of Public Works and the Committee on Streets and Bridges conducted an investigation on the condition of the bridge. They submitted a list of recommendations, including replacing the bridge floor, since they considered it unsafe. They also suggested posting signs warning heavy traffic to cross the bridge at its own risk. The city council initially approved installing a new floor. Eventually, they would need to construct a new bridge but, with a new floor, they though they could postpone that decision at least four to five years. Within two weeks, the Watertown mayor asked the city council to reconsidsr its decision. He had called in engineers from the State Highway Commission to examine the bridge and issue a report. According to their findings, the repair program would cost between $1,200 and $1,500, and ths bridge would still need to be posted to maximum load, probably three and one-half tons. The mayor saw no point in making such a large expenditure when the bridge would still be subject to load restrictions, particularly for a bridge built in 1889 and designed for loads of five tons. The council succumbed to his arguments, rescinded the previous resolution, and agreed to substitute a more modest repair program. Before the repair problems developed on the Milwaukee Street Bridge, the city council had begun plans to replace the Main Street Bridge. The mayor correctly predicted that the city would have to build a new Milwaukee Street Bridge first. He described the bridge as the "main artery" across the river for traffic in the southern section of the city.[2]

Three weeks later, on June 17, 1930, a rspresentative from the Worden-Allen Company, a consulting and contracting firm in Milwaukee, inspected the bridge. Workers had torn off the floor, only to discover more deterioration than expected. They decided to call in a bridge enginser to examine the structure. According to the report submitted, the bridge had the capacity to hold a load of four tons in each lane of traffic. In addition, the stone foundations were in good condition and could be used for a new structure. City officials, including the mayor, began to consider the repair program a total waste of

money. Why spend money, they argued, on temporary repairs for a bridge that would still require a maximum load restriction? It would be more economical to build a new bridge as soon as possible. On July 1, the city council authorized the Board of Public Works to proceed with plans for a new Milwaukee Street Bridge.[3]

To begin, the board looked for an engineer to prepare the plans and specifications for the bridge. After consideration the qualifications of several engineers, they hired a local resident, E. B. Parsons. The board members estimated that it would take three and one-half months to construct a concrete bridge at an approximate cost of $35,000. While Parsons wae compiling his preliminary plans, at least one alderman suggested a less expensive alternative to designing the bridge. He recommended reusing the plans and specifications prepared for two other bridges that were recently erected in the city--the North Fourth Street Bridge and the Memorial Bridge. The only apparent alteration would have been in scale. The Chairman of the Board of Public Works opposed the suggestion. He claimed that altering the old plans would be bad policy, expensive, and inadvisable, according to three engineers he consulted. The new bridge plans were delayed, when several city council members decided the council needed to receive plans for a steel bridge as well ae for a concrete structure. The Worden-Allen Company agreed to provide these plans and a cost estimate in time for an upcoming special council meeting, scheduled to determine what type of bridge to construct.[4]

At the July 28th special session, the city council members accepted three sets of plans for the bridge. E. B. Parsons submitted his plans and specifications for a concrete bridge. The Worden-Allen Company, as requested, delivered plans for a steel structure. The council unexpectedly received a third set of plans for a concrete open arch design from Daniel B. Luten, a prominent bridge designer and engineer from Indianapolis. Luten'e representative, Lee E. Williams, filed the plans with the council's permission and outlined the offer. Whereas the council paid Parsons $900 for his plans and the Worden-Allen Company received $600, Luten submitted his plane without charge. He was free to bid on the specifications, along with other bidders. If he was successful in getting the contract, there would be no extra charge for the plans. If the council awarded the Luten plans to another contractor, that contractor would pay Luten a fee for using the plans and copyrighted material. Williame explained that his firm had successfully carried out this arrangement in other cities. Williams supplemented his presentation with a 46-page booklet, illustrating the bridges that Luten had designed throughout the United States. Of the plans submitted, city officials considered Luten's concrete open arch bridge as the most innovative design. Parsons claimed that he abandoned his original plans to design a concrete open arch bridge similar to the Luten sketch, because the estimated cost ($40,000) exceeded the $35,000 bond issued for the bridge.[5]

The city council set the date for opening the bids on the proposed new bridge. Contractors could submit bids on any or all of the three types of bridges:

concrete, steel and concrete, and concrete open arch. Luten designed the concrete arch bridge to carry a weight of 20 tons; the other two bridges could carry only 12-1/2 tons. At this time, the State Highway Commission bridge standards set 12/1/2 tons as the minimum weight capacity allowed. A local newspaper columnist claimed that during this year, business was slow for contractors and that would increase competition for the project. The Board of Public Works opened 26 bids from 14 contractors in a council room crowded with contractors and spectators. Contractors filed eight bids for the concrete arch bridge, six for the steel bridge, and 12 for the concrete girder design. The Eau Claire Engineering Company submitted the lowest bid ($30,000) for Luten's concrete arch design. They also filed the lowest bid $30,800) for Parson's concrete girder bridge. Grant Montgomery, representing the Guarantee Construction Company, underbid his competitors by offering $31,000 to construct the Worden-Allen-designed steel bridge. The Stein Construction Company, in Milwaukee, entered the highest bid, $42,300 on the concrete arch span. City officials were particularly interested in supporting the two Watertown contractors who submitted bids--George G. Lehman and the Maas Bros., especially the Maas Bros.' third lowest bid ($31,934) for Luten's concrete arch design.[6]

City council members could select from numerous bids because they considered other factors besides cost, such as the time needed to complete the job. Most of the council members favored a concrete bridge, so they immediately eliminated the steel design that Worden-Allen engineers had submitted. After hearing presentations from Williams and Parsons, the council decided unanimously for the Luten concrete arch. Having submitted the lowest bid at $30,800, the Eau Claire Engineering Company, on an accredited list of the state highway department, received the contract. This contracting firm was in operation from the late 1920s to the early 1940s. The council did, however, consider the second and third lowest bidders on the Luten bridge, A. O. Clark and Maas Bros. The Eau Claire firm agreed to begin tearing down the present bridge almost immediately and to have the span open for traffic within 100 working days.[7]

In one day, workers erected a footbridge just south of the old bridge, to accommodate pedestrian traffic until the new bridge was constructed. The same afternoon, work began on tearing away the old structure, with the Eau Claire firm responsible for its disposal. The Board of Public Works authorized the city engineer, Ben King, to inspect the bridge construction. Lee Williams, Luten's representative, would be in the city periodically and available for consulting on the course of the bridge construction. The Eau Claire firm employed several Watertown residents on the job. The number of applications exceeded the positions available, although more jobs would open up as construction progressed. One month later, 30 men were working on the construction crew. Under favorable weather conditions, the construction proceeded ahead of schedule. Workers finished pouring concrete by mid-October, a process that took slightly more than two weeks. They estimated it would take

almost two or three weeks for the slab to set properly. Casting the railing required several days of additional work. The Eau Claire firm initially intended to erect temporary side rails, installing the permanent rails with the arrival of warm weather in the spring, to insure proper installation. But since the weather was favorable, they decided to erect the permanent rails at once. Arthur Ruech of Watertown received the contract for furnishing and installing lights on the bridge.[8]

By mid-November, the workers completed the span. A crowd estimated at 1,500 people attended the dedication ceremony. The only flaw in the celebration was a charge from local railroad employees directed at the construction company. Representatives of 132 railroad men living in Watertown complained to the city council that the Eau Claire Engineering Company had used trucks instead of trains to transport building material into the city. Company officials denied the charge. They claimed that all material for the bridge, including the lumber and steel, had arrived on the railroad, with the exception of the cement.[9]

DESCRIPTION

The Milwaukee Street Bridge is a three-span, open spandrel, reinforced concrete bridge. The continuous-rib-arch structure is 240 feet long and 42 feet wide. It includes a 30-foot roadway and two 6-foot cantilevered sidewalks. The center arch has a 77-foot span with 14.83 foot rise; the end arches have 72-foot spans with 14.67 foot rise. Heavy, square spindles line the balustrade railing. City workers redecked the unaltered bridge in 1983.[10]

FOOTNOTES

1 "Milwaukee St. Bridge Iron Work Collapses," Watertown Daily Times (WDT), February 4, 1929, p. 1, col. 4-5; Watertown, Common Council, Proceedings, February 19, 1929, pp. 417-318; "Council Delays Action on Main Street Bridge Bids," WDT, February 6, 1929, p. 1, col. 5; "Milwaukee Street Bridge Repairs Now Under Way," WDT, February 7, 1929, p. 1, col. 4; "Milwaukee Street Bridge Opened After Repairs," WDT, February 9, 1929, p. 1, col. 5.

2 Watertown, Proceedings September 17, 1929, p. 562; Ibid., d April 15, 1930,
p. 53; Ibid., May 20, 1930, pp. 66-67, 73; Ibid., June 3, 1930, pp. 75-76; "Milwaukee Street Bridge Will Get New $1200 Floor," WDT, May 21, 1930, p. 3, col 5; "Council Switches on Bridge Resolution," WDT, June 4, 1930, p. 1, col. 1-2.

3 Watertown, Proceedings, July 1, 1930,p. 90; "Council To Get Bridge Report July 1," WDT, June 26, 1930, p. 1, col. 1; "Council Expected to Advance Bridge Plans," WDT, July 1, 1930, p. 1, col. 4-5; "Expect to Hire Bridge Engineer Here On Monday," WDT, July 5, 1930, p. 1, col. 2.

4 Watertown, Proceedings, July 1, 1930, p. 93; Ibid., July 15, 1930, p. 98; "Expect to Hire Bridge Engineer Here On Monday," WDT, July 5, 1930, p. 1, col. 2; "E. B. Parsons Named to Prepare Bridge Plans," WDT, July 8, 1930, p. 1, col. 4-5; "Milwaukee Street Bridge May Cost Around $35,000," WDT, July 11, 1930, p. 7, col. 6; "Alderman Glaser Reports on Plan For New Bridge," WDT, July 16, 1930, p. 3, col. 2; "New Bridge Plans Again Delayed As Estimate Is Due," WDT, July 26, 1930, p. 1, col. 5; "Special Meeting of City Council Set For Tonight," WDT, July 28, 1930, p. 1, col. 4.

5 Watertown, Proceedings, July 28, 1930, p. 99; Ibid., August 5, 1930, pp. 107, 110, 112; Ibid., August 19, 1930, pp. 113-116; "Two Bridge Plans to be Submitted to City Council," WDT, August 19, 1930, p. 3, col. 4; "Council Takes Steps as Incenerator is Ignored," WDT, August 20, 1930, p. 1, col. 1 and p. 4, col. 3-4; "Cost of 2 Bridge Plans May Reach $1500 in Fees," WDT, August 22, 1930, p. 1, col. 4-5, and p. 4, col. 4-5.

6 Watertown, Proceedings, September 5, 1930, p. 121; "New Bridge Bids For Three Types Due September 4," WDT, August 23, 1930, p. 1, col. 6; "Contractors Get Data For Bids On New City Bridge," WDT, August 28, 1930, p. 1, col. 5; "Council Acts On New Span Friday; Bids Are Opened," WDT, September 4, 1930, p. 1, col. 4; "Bridge Contract Award Appears An Even Toss," WDT, September 5, 1930, p. 1, col. 4-5.

7 Watertown, Proceedings, September 4, 1930, p. 122; "Bridge Contract Award Appears An Even Toss," WDT, September 5, 1930, p. 1, col. 4-5; Eau Claire City Directories, 1923-1943 (some volumes missing), listings under Eau Claire Engineering Company; "Work On New Bridge Starts Monday," WDT September 6, 1930, p. 1, col. 7.

8 Watertown, Proceedings, October 7, 1930, pp. 128, 130; Ibid., November 4, 1930, pp. 138-139; "Foot Bridge Now Ready For Use in Milwaukee Street," WDT, September 9, 1930, p. 2, col. 4; WDT, September 9, 1930, p. 2, col. 4; "Expect to Pour Slab On Bridge in 2 Weeks," WDT, October 7, 1930, p. 1, col. 405; "Thanksgiving To See New Bridge Completed Here," WDT, October 18, 1930, p. 3, col. 5.

9 Watertown, Proceedings, November 18, 1930, p. 142; "High School Bank To Take Part In Bridge Opening," WDT, November 13, 1930, p. 7, col. 5-6; "Nearly 1,500 At Dedication Rites Opening New Span," WDT, November 19, 1930, p. 4, col. 5; "Deny Charge That Bridge Work Here Slighted Railways," WDT, November 19, 1930, p. 3, col. 1.

10 Concrete Bridge Survey, December 1985 (Wisconsin Department of Transportation, Madison, Wisconsin).

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Drawings. Blueprint copies of original Luten drawings (City Engineers Office, Watertown Municipal Building, Watertown, Wisconsin).

City Directories. Eau Claire. 1923-1943.

Concrete-arch Bridge Survey for Milwaukee Street Bridge (P-28-709) (Wisconsin Department of Transportation, Madison, Wisconsin).

Luten, Daniel B. "Reinforced Concrete Bridges," in Proceedings of the Engineering Society of Wisconsin (March 1911), pp. 48-82. In a presentation to Wisconsin engineers, Luten urged his audience to design more reinforced concrete bridges; he also cautioned them to let the contracts only to qualified companies. Apparently the engineers still favored steel structures. In addition, a problem had developed because many builders did not understand the design principles behind concrete construction.

Watertown. Common Council. Proceedings. 1928-1930.

Watertown Daily Times. 1929(February)-1930(November).